

## **Measurement of Analyzing Powers for Polarized Proton Scattering on CH<sub>2</sub> Target at Proton Momentum Range from 1.75 to 5.3 GeV/c**

L.S. Azhgirey, V.A. Arefiev, S.N. Basilev, Yu.P. Bushuev, V.V. Glagolev, D.A. Kirillov, P.P. Korovin, P.K. Manaykov, I. Mussinsky, N.M. Piskunov, I.M. Sitnik, V.M. Slepnev, I.V. Slepnev (Joint Institute for Nuclear Research, Dubna, Russia), E. Tomasi-Gustafsson (DAPNIA, Saclay, Gif-sur-Yvette Cedex, France), C.F. Perdrisat (College of William and Mary, Williamsburg, USA), V. Punjabi (Norfolk State University, Norfolk, USA), M.K. Jones (TJNAF, Newport News, USA), G.F. Kumbartzky (Rutgers University, Piscataway, USA), I. Atanasov (Institute of Nuclear Research and Nuclear Energy BAS, Sofia, Bulgaria), L. Penchev (Institute of Nuclear Research and Nuclear Energy BAS, Sofia, Bulgaria & College of William and Mary, Williamsburg, USA)

Measurements of the analyzing power for  $p + \text{CH}_2 \rightarrow p + X$  were performed at the JINR synchrophasotron with secondary polarized proton beams of momenta  $p = 1.75, 3.8, 4.5$  and  $5.3$  GeV/c. This study is especially important to optimize a polarimeter necessary to extend the measurement of the proton electric form factor at Jefferson Laboratory. At  $3.8$  GeV/c the dependence of the efficiency of the reaction on the CH<sub>2</sub>-target thickness (41, 56, 71 and 86 cm) was studied in detail.

For protons of  $3.8$  GeV/c, the analyzing power is fairly independent from the amount of material in the analyzer, from 40 to 86 cm; this is a very important feature for the design of future high energy polarimeters.

The analyzing power decreases with increasing incident momentum, but it is still sizeable at a proton momentum of  $5.3$  GeV/c. This validates the JLAB proposal to build a new polarimeter based on this principle, in this kinematical range.

The CH<sub>2</sub> shows a larger analyzing power than the graphite at  $1.75$  GeV/c.